Gopalakrishna, H. S.; Umarani, Prakash G.
On a class of functions close to functions of bounded boundary rotation. (English)

Denoting the class of all regular functions \(f(z)\) in the open unit disc with \(f(0) = 0\), \(f'(0) = 1\) by \(A\) and the class of functions of bounded boundary rotation by \(V_k\) the authors define the class \(W(k, \alpha)\) for \(k \geq 2\) and \(|\alpha| \leq \pi/2\) as follows. \(f\) in \(A\) belongs to \(W(k, \alpha)\) if and only if

\[
\text{Re}\{e^{i\alpha} \left( \frac{f'(z)}{g'(z)} \right) \} > 0 \quad \text{for} \quad |z| < 1
\]

for some \(g \in V_k\). Let \(W_k = \cup_{\alpha} W(k, \alpha)\). Sharp radii of convexity and close-to-convexity, distortion theorems bounds for \(f''(z)\) are obtained using Goluzin’s method of variations for the classes \(W(k, \alpha)\) and/or \(W(k)\).

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MSC:
30C45 Special classes of univalent and multivalent functions of one complex variable (starlike, convex, bounded rotation, etc.)
30C70 Extremal problems for conformal and quasiconformal mappings, variational methods

Keywords:
nradius of close-to-convexity; bounded boundary rotation; radii of convexity